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THE BLACK WALNUT (*Juglans nigra* L.)

The black walnut, the name more often shortened to walnut, has been from the earliest times regarded as one of the most important forest trees of Indiana and in fact of the United States. The rare value of its wood was soon learned in foreign countries which created a large demand for it which continues to date. Its peculiar fitness for gun stocks and aeroplane propellers created such a demand for it during the World War that practically all of the accessible virgin walnut was cut. This unprecedented demand for this wood has had a most favorable reaction in that today this species is being planted more than any other. All over the country where a land owner is planting only a few forest trees they are almost invariably walnut.

Range and distribution.

The natural range of the black walnut is from Ontario south to the Gulf States and west to Texas and Nebraska. It was found throughout Indiana, although sparingly in the Kankakee Valley and among the hills of the southern counties. This tree is frequent in all parts of the State along fences, for the most part having been planted by squirrels while the rail fences were still in existence. The rail fences are gone and the chipmunk is nearly extinct, so the planting in the future must be done by man.

Habitat.

In the virgin forest this species reached its greatest size in the rich, deep alluvial soil along streams, and in beech-sugar maple woods. In the open it will grow in almost any kind of soil but in very sandy soil and in the hard clay "flats" or in the hard clay uplands it rarely reaches saw log size and should never be planted on such sites. For the same reason it should not be planted on old worn out fields.

Silvicultural characteristics.

The black walnut differs very much from the oaks and hickories in that it grows rapidly in the juvenile stage. In good soil where it is not compelled to compete with grass and weeds, it usually makes a growth of 12 to 18 inches the first year from the seed. Each succeeding year it will grow about two feet or more in height. It develops a deep root system and its top produces relatively little shade. It has the very objectionable habit while young of often forming two or more leaders each year. All but one of these should be cut back half their length at the end of the season, leaving the most promising one for a leader. Or one or two of the excessive leaders may be cut off at the base and the remainder cut back half way, but all of the excessive leaders should not be cut off at the base because then all the strength of the tree would be thrown into the one leader which would cause it to grow so fast as to be in danger of being broken off by wind storms. If time can be given to the work of pruning, it is best to tie a straight stick as long or longer than the tree is high to the base of the tree and just below where the tree begins to fork, and then tie the leader over to the stick. After the leaves fall, the stick should be removed, and if the tree forks again, the same operation should be repeated. If this method is not used where trees grow in the open, many of the trees will have short trunks which materially decreases their value for timber and shades the ground more.

Characteristics of the Wood.

Walnut wood is hard, heavy, strong and stiff. It seasons well, with little shrinkage, twisting or warping. Weight for weight it is stronger than white oak. It works easily, and resists shocks well without breaking or splintering. It is susceptible to a good polish and takes paint, stain and other finishes exceedingly well.

Economic uses.

Walnut wood can be used for almost any purpose. However, on account of the high price, its use is becoming more restricted. The price in Indiana has always headed the list. It is now used principally for furniture, fixtures, interior finish, car construction, musical instruments and for firearms.

The nuts of the walnut are rich in fats, proteins, vitamins, lime and iron. In nutritive value nuts exceed all other food substances. The walnut has a distinctive flavor and the demand for it would be more universal if it were more plentiful. No nut has a better future than the walnut, and it is predicted that it will soon become a staple article of our diet rather than a luxury.

Insect and fungus enemies.

This tree has no deadly insect or fungus enemy. The leaves are often eaten by the larvae of certain insects but the most of them have the habit of collecting on the body of the tree about sundown when they can be burned with a torch. A fungus disease sometimes causes the nuts to shrivel up.

Propagation.

The walnut is propagated either from seed or seedlings. Since it does not come true from the seed, if a horticultural form is desired, it is necessary to resort to budding or grafting, both of which are difficult operations.

The most economical way is to plant the nuts where the trees are desired, if there is but little danger of the nuts being carried away by rodents. The nuts, with or without the hull on, can be planted either in the Fall or stratified nuts planted in the Spring. They should be planted one in a hill, 2 to 3 inches deep. Any failures should be promptly planted the following year. If there is danger of the nuts being frozen to the surface during the winter or being carried away by rodents it is best to plant one-year-old seedlings. Since the walnut grows a deep tap root, it is not advisable to try to plant older trees. To obtain seedlings, the nuts should be stratified in the Fall and planted in the Spring from about the first to the middle of April in rows about three feet apart so that they can be cultivated. Drill the nuts in the rows 2 to 3 inches apart and cover 2 to 3 inches deep.

The nuts can be stratified any time during the Fall in mice tight but not water tight boxes or on the ground in a well drained place far enough from buildings that rats will not bother them. The nuts should be gathered from trees that were not defoliated during the summer. Hulled nuts are to be preferred because they are not so messy to handle while planting. Then, too, the seed can be tested by immersing in water as the worthless ones will float. For convenience in handling, the nuts should be stratified in sand if obtainable. If sand is not available earth is just as good. First place about two inches of sand in the box and follow with a layer of nuts 2 to 3 inches thick. Cover about an inch deep with sand and again follow with a layer of nuts and continue to alternate until the box is filled. The last layer should be covered about three inches deep. The boxes should be placed on top of the ground in a well-drained place or partially buried. The top of the box should be covered only with a wire screen to keep out rodents. If the nuts are stratified on the ground, scoop out a few inches deep and then place the nuts on the ground to a depth of about three inches and cover 3 to 4 inches deep. If any of the covering is washed off, it should be replaced. If it is dry in early Spring, the boxes and beds should be watered. When the nuts are taken out of the beds, they should be planted at once before they dry out.

Discussion of how and where to plant walnut.

The walnut does not produce enough shade to do well in a pure stand. If it is desired to plant a field with walnut as the principal species, it is best to plant it alternately with red oak or tulip in rows four feet apart and the trees every four feet in the rows. Arrange the trees in the rows so that the same species is not opposite each other. When the trees begin to crowd, cut out every other row each way. This will leave the walnut eight feet apart. It is not feasible to mature the stand in rows and after the first thinning is made or even before, some

shade enduring species, such as the sugar maple or white oak, should be planted. Since white oak is a slower grower, it could be planted in the center of the spaces between the trees when the walnut are planted if the added expense is not objectionable. Crowding of the tops must determine subsequent thinnings.

In reinforcing woodlands with walnut it is useless to plant it under larger trees or in a clump of shade enduring trees that will soon over-top it.

It is especially adapted to roadside tree planting because its deep root system does not interfere with cultivation and it produces relatively little shade. When planted along the roadside they should not be spaced closer than 35 feet and should be pruned up each year until the mature tree will yield a saw log not less than twelve feet long. The higher the tree is pruned up the less the adjacent crop is affected by its shade.

Walnut should be a common tree in permanent pastures. The timber and nut crop, together with the shade afforded the animals, will yield a good revenue. When planted thus in the open they should be pruned up and protected from stock for several years.

Any nook or corner of the farm, such as a creek bank or along a ravine, where a walnut tree can be planted should be utilized.

"EAT MORE WALNUTS"

**One pound of walnut "meats" has more
Food value than a pound of beef meat.**

**You can grow more walnut meat per acre
Than you can beef meat.**

Nuts are richer in lime than meat.

Growing children crave nuts.

Plant your walnut trees this year.

Your timber crop will be all profit.